Albinism in the Great Gray Owl (*Strix nebulosa*) and Other Owls

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Abstract.—An incomplete albino Great Gray Owl (*Strix nebulosa*) was observed in Vesanto and Kajaani, Finland, 1994-1995. The literature pertaining to albinism in owls indicates that total and incomplete albinism has only been reported in 13 different owl species, the Great Gray Owl being the only species with more than five records. Thus six to seven incomplete albino Great Grays have been recorded since 1980 in Canada, Finland, and the United States.

It would seem that most animals produce occasional albinos; some species do so quite frequently whilst this phenomenon is much rarer in others. Although albinism in most avian families is frequently recorded, we know of very few abnormally white owls. Thus the motive of this paper is to assemble as complete a record as possible of white or light color mutations of owls which exist or have been recorded.

GENETICS OF ALBINISM

Albinism is derived from a recessive gene which inhibits the enzyme tyrosinase. Tyrosine, an amino acid, synthesizes the melanin that is the basis of many avian colors (Holt *et al*. 1995). Albinism in birds has been separated into four categories:

1. Total albinism—a simultaneous complete absence of melanin from the eyes, skin, and feathers. This is the rarest form. Gross (1965) reported 7 percent of 1,847 cases of avian albinism examined as being of this type.

2. Incomplete albinism—when melanin is not simultaneously absent from the eyes, skin, and feathers.

3. Imperfect albinism—when melanin is reduced in the eyes, skin, and feathers; and

4. Partial albinism—when albinism is localized to certain areas of the body (Mueller and Hutt 1941).

Partial albinism may result from injury, physiological disorder, diet, or circulatory problems. This type of albinism is most frequently observed. It is important to note that white plumage is not necessarily proof of albinism.

Adult Snowy Owls (*Nyctea scandiaca*) are primarily white, but have their feather color derived from a schemochrome feather structure which possesses little or no pigment. Light reflects within the feather structure and produces the white coloration (Holt *et al*. 1995).

ALBINISM IN THE GREAT GRAY OWLS

An extremely light and large Great Gray Owl was first seen on March 27, 1994 in Vesanto,

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Incomplete Albino Great Grey Owl in Vesanto, Finland, 1994.

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central Finland, where a great invasion of the great grays was witnessed in that spring. Six 'normal' Great Gray Owls were seen in March - April in a pasture area of about 20 ha. Due to the poor prey (vole) situation no known breeding took place in 1994 despite active courtship observed between the light and a normal great gray in the area. The last observation of the light and large owl was made in November 1994 about 2 km away from the field. After that, no great grays have been seen in the area to date (1996).

In 1995, a similar large and white Great Gray Owl was again seen in March, near Kajaani, about 165 km north from Vesanto (P. Helo, pers. comm.). By comparing the photos taken by Pentti Alaja and Pekka Helo of both birds, they were thought to be the same individual.

The crown, nape, mantle, scapulars, back, breast, flanks, and belly of the light owl were almost white. The ruff and facial disc lacked the barring and the typical great gray's concentric circles were not visible, although the face and edge of the ruff had some light brown markings. The eyes, however, were yellow, edged on the inside with a touch of blackish-brown. Two large outward-facing 'commas' were white as usual. The bill was normal, but surrounded by a brown 'beard' instead of the normal black. The owl had white 'moustaches' and fairly prominent white patches in the middle of the foreneck as usual. Flight and tail feathers were also very light, but had some faint brown markings giving the bird a somewhat yellowish look. Also, the toes, talons, and tarsus were much lighter than normal.

Although this owl was very light, we conclude it best fits the incomplete albino definition, as its eyes and toes were not pink. Other reports of the same bird listed it as an albino (Wanders 1994) or as leucistic (Lehto and Lehto 1995). Leucistic means birds with muted coloration.

In the United States, the first imperfect Great Gray Owls were seen in 1980 by Mary Maj on the Targhee National Forest, Idaho. Between 1990 and 1992 several observations of an adult white Great Gray Owl were recorded in southeastern Idaho, some 112 km from the Targhee National Forest site. This owl was more strikingly white than the one(s) seen by Maj (Whitfield *et al*. 1995), i.e., it was the first incomplete albino reported in the United States.

Michael B. Whitfield

*Partial albino Great Gray Owl (*Strix nebulosa*) from eastern Idaho.*

This white owl, later determined to be a male, occupied the same breeding area over three seasons and raised three normally plumaged gray owlets in two out of three breeding seasons (Whitfield *et al*. 1995). The female was normally colored. According to Holt *et al*. (1995), two or three partial albino Great Gray Owls have also been seen in Yellowstone National Park by Mr. Terry McEneaney, but further details are lacking on the extent of albinism of these great grays.

In Canada, before mid-1980 Herbert W.R. Copland and Robert W. Nero observed only five Great Gray Owls with some abnormal white feathers during the lengthy process of handling more than 300 live and some 80 dead adult owls (Scriven 1984).

Since mid-1980, there have been two incomplete albino Great Gray Owls reported in Canada. The first white Great Gray Owl was seen in June 1990 near Norway House, Manitoba (Nero 1991). Distinctly different, but a still incomplete albino was sighted in the boreal forests north of Winnipeg in December 1990 (Holland 1991). Thus far, at least six to seven incomplete albino Great Gray Owls have been recorded since 1980 in the United States, Canada, and Finland.

ALBINISM IN OTHER OWLS

Albinism in owls is rare, particularly true albinism (see Gross 1965). Among owls, only

the following seven total albinos have been recorded:

1. One total albino Barred Owl (*Strix varia*) was reported from North America by Dean (1976).

2. An albino Eastern Screech-owl (*Otus asio*) reported by Holt *et al*. (1995) from Long Island, New York for at least 5 years from 1982 to 1987.

3. Ross (1973) reviewed albinism in North American birds and also reported a complete albino Eastern Screech-owl specimen, but did not cite the origin of the report.

4. In his book, "A Guide to Birds of Ceylon," G.M. Henry (1969) records that for several years he had a female albino Brown Wood-owl (*Strix leptogrammica*) paired to a normally colored bird. Although she laid eggs, all were infertile.

5. A wildlife rescue organization in Italy received a nestling albino Tawny Owl (*Strix aluco*) which was reared to independence and then released. We have enclosed John Clarke's photograph of it.

6. In Spring 1996, the R.S.P.C.A. Wild Animal Hospital at Somerset, England, also had a young albino Tawny Owl handed in (Bernard C. Sayers 1996).

7. A 'snow white' Short-eared Owl (*Asio flammeus*) was seen on August 19, 1997 in the then "new" Flevopolder near Ketelhaven, the Netherlands (Rudolf F. Koes, pers. comm.).

In addition, we know of the following incomplete albinos:

1. Burrowing Owl (*Speotyto cunicularia*) from the U.S.A. (Sutton 1912).

2. Great Horned Owl (*Bubo virginianus*) from the U.S.A. (Spofford 1952).

3. Short-eared Owl (*Asio flammeus*) from the U.S.A. (Sage 1983).

4. An adult and one young Western Screech-owl (*Otus kennicottii*) observed in Washington State by Terry Flemming (Holt *et al*. 1995).

John Clarke

Total Albino Tawny Owl in Italy.

5. A local population of white Little Owls (*Athene noctua*) in Jerez, Spain; some were exhibited in the Jerez Zoo (Sayers 1996). Although uniformly white, they had normal eye coloring.

6. Antwerp Zoo in Belgium has bred one or more leucistic (isabelline) Spectacled Owls (*Pulsatrix perspicillata*) (Sayers 1996).

7. Bill Ayling, who maintains a small private owl collection in Norfolk, England, bought a pair of Barn Owls (*Tyto alba*) from a breeder in Essex. The male is pure white, although its eyes are of normal coloration (Mikkola and Sayers 1997).

8. B. Sayers has one pair of Indian Scops-owls (*Otus bakkamoena*), which produced a leucistic (isabelline) young in 1994, and again in 1995 and 1996 (Mikkola and Sayers 1997).

9. Lincoln Childrens Zoo in the United States had a pure white Eastern Screech-owl with a few tan feathers on the breast, but the eyes were not pink (Bennett 1969). Earlier this bird was said to be "pure white with pink eyes" (Schneider 1969).

Gross (1965) noted nine cases of albinism from five species of owls in North America, but did not list the species or degree of albinism. It is likely that some of the species of owls cited above were, in fact, also included in his report.

DISCUSSION

Albino animals are thought to have a short life expectancy in the wild due to the following factors:

1. Intraspecific conflict in rejection by their congeners; which particularly applies to gregarious species.

2. Pink-eyed, albinistic birds have poor eyesight, a physical disorder which becomes most acute in bright light.

3. Conspicuous nature of their color makes them more vulnerable to predation. When the mutant is, itself, a predator, an unobserved approach on their prey may be less likely, thereby lowering foraging success.

However, the observations cited in this paper show that albinos and incomplete albinos have paired normally and survived several years in the wild. So owls seem less affected by the above-mentioned problems than most other birds. Abnormal color would only marginally affect a nocturnal predator's hunting success, as most owls locate their prey by sound rather than by sight. Thus, poor eyesight in bright sunlight is not a disability to a nocturnal species (Sayers 1996).

However, it remains a mystery to the authors why so many incomplete albino Great Gray Owls have been recorded since 1980 in the Northern Hemisphere, although albinism in owls is normally extremely rare.

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